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AUTHOR Hiatt, Evelyn Levsky, Ed.; Covington, Jeanette, Ed.
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ABSTRACT

This document is a "theme" issue of a quarterly serial publication. It focuses on curriculum development for gifted students. A list of 13 principles of a differentiated curriculum for gifted/talented students precedes the articles. The first article, "Developing Curriculum for Gifted/Talented" by Jim Coffey, offers a philosophical rationale for a differentiated curriculum for gifted students and provides a step-by-step process of curriculum development. It also introduces certain concepts--the importance of a thematic approach, for example--that are re-emphasized in the articles that follow. In the second article, "Multidisciplinary Programs at the Elementary Level," Michele Riojas explains the importance of developing multidisciplinary units for gifted programs through a review of the research. The third article, "Developing Student Objectives That Are Differentiated for Gifted/Talented Students," by Judith Martin, presents many specific examples of the elements that should be incorporated into objectives for these students. The fourth article, "An Interdisciplinary Unit on Environmental Studies," by Tom Weldon and Betty Strickland, demonstrates principles and practices of secondary school curriculum development in focusing on the interdisciplinary theme of "structures" and student objectives that lead to understanding of generalizations related to that theme in the traditional subject areas of science, language arts, mathematics, social studies, marketing education, and economics. Finally, Jeanette Covington and Evelyn Hiatt respond to frequently asked questions relating to gifted/talented curriculum development. (DB)

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UPDATE ON GIFTED EDUCATION

CURRICULUM

Vol. 1, No. 2
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of the
Division of Gifted/Talented Education
Texas Education Agency

FOREWORD

In his book, *Planning and Implementing Programs for the Gifted,* James Borland (1989) notes, "Unless we make some change in the educational programs of identified gifted students, there is no logical justification for bothering with any aspect of a program for the gifted." Too often, however, our focus is on the assessment of students for gifted programs, rather than on designing a curriculum that meets their unique learning needs. However, the Texas state definition includes the sentence, "These students require educational experiences beyond those normally provided by the regular school program." This sentence emphasizes the need to redress the mismatch between the learner and the program. This is done by developing a qualitatively differentiated curriculum.

Note that the emphasis is on "quality," not "quantity." Sometimes, educators ask gifted youth to do 20 problems instead of 10, or a 25 page paper rather than one of 15 pages. The articles in this issue of *Update in Gifted Education* offer guidance in how a district may develop a curriculum that is qualitatively enhanced by focusing on the characteristics that differentiate the gifted learner from others in the school population. The curricular differences do not make the gifted program "better" than other programs--it makes them more appropriate for some of the students in our school districts. The curriculum is not just "different" either. It is not composed of add-on enrichment activities that are appropriate and interesting for all children. The curriculum for a gifted program systematically addresses the cognitive and affective needs of identified students. If it does not, we have, as Borland implies, both wasted our time by identifying these students and failed in our charge to educate them to maximum capacity.

Although every district's curriculum for gifted youth will be slightly different, all should build on the regular school program. All should require mastery of the basic skills required of all students. All should recognize and respect the individual and cultural differences of our students. All should provide an appropriate level of challenge so that gifted students are not bored, underachieving, or required to do less than their best work.

This issue of *Update* provides a general background into curriculum development for gifted programs and sets the stage for later issues that will focus on other areas related to this aspect of program development. If you have a particular topic that you would like to see covered in future issues, please do not hesitate to contact the Division of Gifted/Talented Education at 512-463-9455.

Sincerely,

Jay Cummings
Deputy Commissioner for
Special Programs

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This publication was developed by Agency staff members in the Office of the Deputy Commissioner for Special Programs.

J.R. CUMMINGS
Deputy Commissioner for Special Programs

EVELYN LEVSKY HIATT
Director of Programs I
Division of Gifted/Talented Education

Division of Gifted/Talented Education

JEANETTE COVINGTON
Education Specialist II

JAIME GARCIA
Education Specialist II

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Introduction

Last quarter, *Update in Gifted Education* focused on the identification of gifted students. Because this was the first year of the mandate, many districts concentrated their efforts on the development of identification procedures that were both sound and appropriate for their total student population. However, emphasis must shift from *who* will be included to *what* will be taught. This issue, therefore, concentrates on the development of curriculum that will address the needs of the identified gifted students.

The first article, by Jim Coffey of Region XV Education Service Center, offers a philosophical foundation for why a differentiated curriculum is needed for gifted students. It provides a step-by-step process by which curriculum can be developed. It introduces certain concepts--the importance of a thematic approach, for example--that are re-emphasized in the articles that follow.

Michele Riojas, who teaches in Judson Independent School District, explains the importance of developing multidisciplinary units for gifted programs. Like Mr. Coffey, she offers a research-based foundation for the development of such units and includes several sources that can be tapped for further information.

While the first two articles present an overview on curriculum development, the third article, by Dr. Judith Martin from Region XX Education Service Center, focuses on the development of student objectives that are appropriately differentiated for gifted students. Numerous examples are presented and described so that the reader has a clear idea of the elements that should be incorporated into the objective. Because the Texas State Board of Education rules relating to gifted education require that all school districts must develop a scope and sequence and student objectives for the program, this article is particularly helpful.

The fourth article is by Jeanette Covington and Evelyn Hiatt from the Division of Gifted/Talented Education and offers responses to some of the most frequently asked questions relating to curriculum development. Readers may wish to review this article first, as it provides definitions and examples of themes and generalizations, two concepts that are discussed in several of the articles.

Finally, while the articles provide both research and examples to support the development of appropriately modified curriculum for gifted learners, an interdisciplinary unit on environmental studies that is designed for a secondary school gifted program is included in this issue. It incorporates many of the ideas expressed in the articles and may be used as a guide by program planners in developing their own units. Based on reader response, future issues of the *Update* may include other curricular units.

It would be impossible to adequately cover the topic of curriculum development for gifted learners in one issue of a journal. Future issues will examine instructional strategies, the learning environment, multicultural approaches, grouping strategies, and program models. It also is important to remember that there are many different approaches to the development of curriculum. The articles included in this issue offer several options that can be used to comply with State Board rules and guidelines. As always, however, districts are encouraged to use those approaches that best meet their local needs. In all cases, however, as stressed in each of the articles, program planners should use the Principles of a Differentiated Curriculum, included on the following page, as their guide in curriculum development.

Should you have any questions regarding the articles included in this issue or if you would like further information on gifted education, please do not hesitate to contact the Division of Gifted/Talented Education at 512-463-9455.

Evelyn Levsky Hiatt and Jeanette Covington, Co-editors

PRINCIPLES OF A DIFFERENTIATED CURRICULUM FOR THE GIFTED/TALENTED

- PRESENT CONTENT THAT IS RELATED TO BROAD-BASED ISSUES, THEMES, OR PROBLEMS.
- INTEGRATE MULTIPLE DISCIPLINES INTO THE AREA OF STUDY.
- PRESENT COMPREHENSIVE, RELATED, AND MUTUALLY REINFORCING EXPERIENCES WITHIN AN AREA OF STUDY.
- ALLOW FOR THE IN-DEPTH LEARNING OF A SELF-SELECTED TOPIC WITHIN THE AREA OF STUDY.
- DEVELOP INDEPENDENT OR SELF-DIRECTED STUDY SKILLS.
- DEVELOP PRODUCTIVE, COMPLEX, ABSTRACT, AND/OR HIGHER LEVEL THINKING SKILLS.
- FOCUS ON OPEN-ENDED TASKS.
- DEVELOP RESEARCH SKILLS AND METHODS.
- INTEGRATE BASIC SKILLS AND HIGHER LEVEL THINKING SKILLS INTO THE CURRICULUM.
- ENCOURAGE THE DEVELOPMENT OF PRODUCTS THAT CHALLENGE EXISTING IDEAS AND PRODUCE "NEW" IDEAS.
- ENCOURAGE THE DEVELOPMENT OF PRODUCTS THAT USE NEW TECHNIQUES, MATERIALS, AND FORMS.
- ENCOURAGE THE DEVELOPMENT OF SELF-UNDERSTANDING, I.E., RECOGNIZING AND USING ONE'S ABILITIES, BECOMING SELF-DIRECTED, APPRECIATING LIKENESSES AND DIFFERENCES BETWEEN ONESELF AND OTHERS.
- EVALUATE STUDENT OUTCOMES BY USING APPROPRIATE AND SPECIFIC CRITERIA THROUGH SELF-APPRAISAL, CRITERION REFERENCED AND/OR STANDARDIZED INSTRUMENTS.

National/State Leadership Training Institute on the Gifted and the Talented, Developed by the Curriculum Council (James J. Gallagher, Sandra N. Kaplan, A. Harry Passow, Joseph S. Renzulli, Irving S. Sato, Dorothy Sisk, Janice Wickless).

Developing Curriculum for Gifted/Talented

James L. Coffey
Educational Specialist
Region XV Education Service Center
San Angelo, Texas

The purpose of this article is twofold. First, it establishes that specific curricular needs exist for gifted learners and second, it emphasizes that these needs must be addressed in a cohesive process that relates each component of gifted programs to one another. An overview of current literature supports the need for specialized curricula for gifted learners. A process detailing one model that can be used to establish a structurally sound program of curriculum development and program implementation is then described.

The research on gifted students stresses the need to develop curriculum that meets their unique learning needs. While experts in the field express this idea in different ways, the theme is often repeated. As examples, Kaplan (1986) states that curriculum for the gifted can be defined as a match between recognized needs, abilities, and interests of the gifted students with the purposes and expectations held for them by the educational establishment. Van Tassel-Baska (1988) extends this idea by identifying four basic assumptions that should support a school district's commitment to the development of gifted curricula. They are that:

- the regular school curriculum, as it is currently developed, is inappropriate for gifted learners,
- general curriculum should be modified by deletion of material as well as addition of material,
- curriculum development for the gifted is a process that involves adaptation of current curriculum and the infusion of appropriate gifted curricula, and
- curriculum for the gifted must be written and communicated throughout the district.

Before beginning to develop curriculum for gifted programs, however, a district must address certain nonnegotiable standards that are critical to the success of a program.

1. There must be a clearly articulated program from kindergarten to twelfth grade. The intent of this standard is to reduce the fragmentation that may occur when there is no central direction established for program growth.

2. The direction of the program is defined in the scope and sequence that addresses program content with regard to the skills being taught.

3. The program is sequential, with skills and content addressed at one year being prerequisite to activities presented the following year.

4. Certain check points are built into the program to allow for student assessment to determine continued placement.

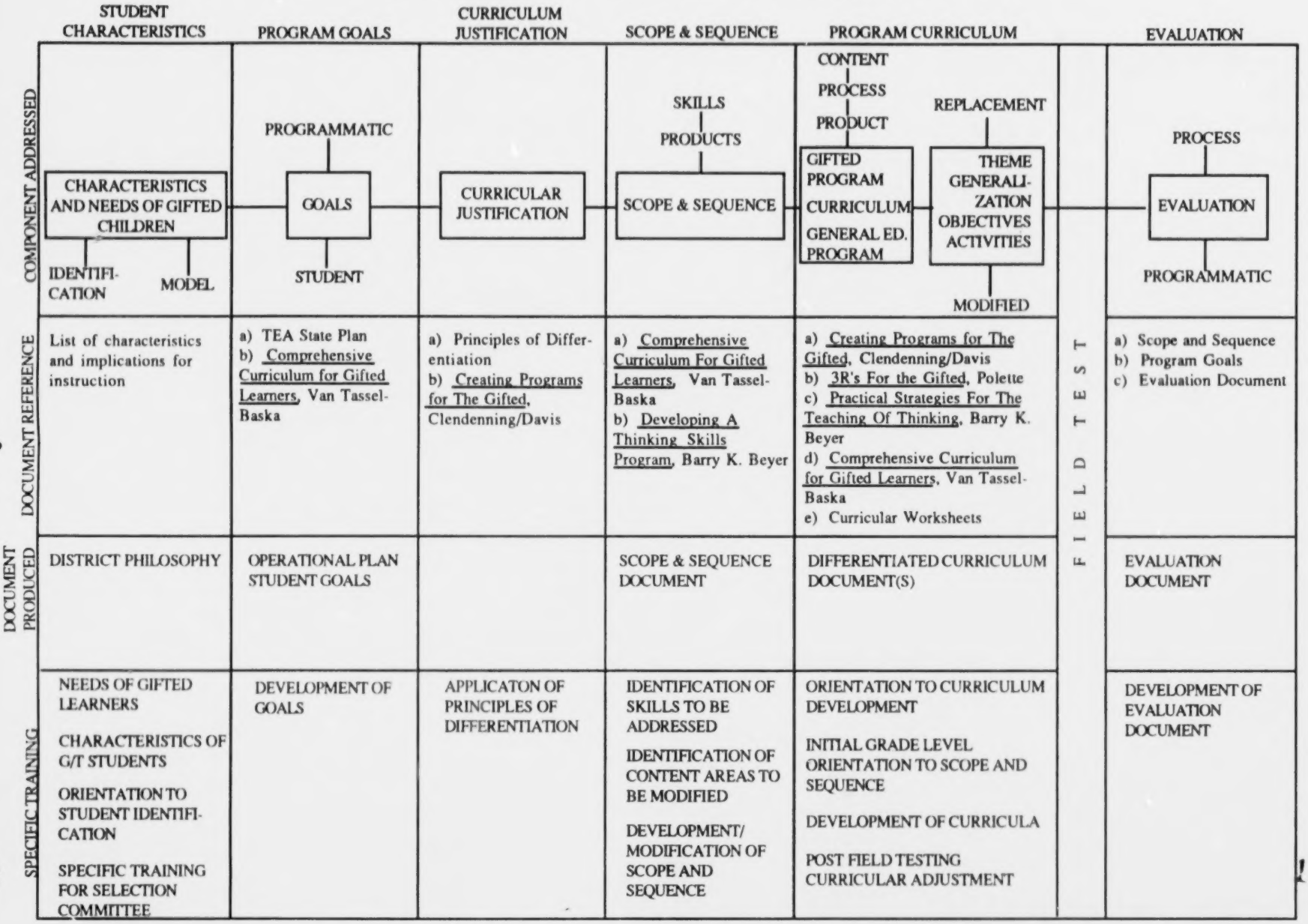
5. There is commitment on the part of the district to the on-going development of appropriate curriculum for gifted students.

With an understanding of, and commitment to these managerial standards, school district program planners may then begin addressing a process to support curriculum development. Because it is often the case that districts are simultaneously developing both their programs and their curriculum, the task often seems overwhelming. It may be facilitated, however, by providing program planners with a systematic process that highlights critical aspects of program development while maintaining the perspective needed to view the total program.

Figure one depicts such a system. It combines a research base with sound educational practices that allows program planners to examine individual components within the perspective of the entire program. The first horizontal column addresses a particular program component. The second column indicates what materials might be used as reference sources. The third column indicates the document or

Figure 1

AN OVERVIEW OF COMPONENTS IN GIFTED PROGRAMS



documents produced, and the last column indicates the training needed by program planners and teachers.

The vertical columns focus on program components, with the first one emphasizing student characteristics. Every activity linked to education of any student should be based on the specific needs of the learner and the learning characteristics, or styles, of that learner. So it is with gifted education. Students who are gifted have characteristics that single them out from their peers. The curricular and instructional implications of these characteristics form the philosophical basis for the modification of teaching processes for gifted learners.

The second vertical column indicates the importance of programmatic and student goals for gifted programs. Programmatic goals deal with the basic elements of any instructional program and include, but are not limited to goals relating to identification, training, and program management. Student goals, which are broadly stated and limited in number, typically address advanced level content and products, as well as higher level thinking skills, research skills, and the application of such skills in instruction.

The importance of student goals must be stressed, primarily because they often are forgotten during curricular planning and instruction. These goals provide the initial direction for the program. In doing so, they provide one of the basic elements for both curriculum and instruction. Instructional objectives and activities must both relate to student goals. If they do not, either the goals or the objectives must be called into question. Training in goal development should include all administrators and teachers who have instructional or supervisory responsibilities for gifted programs. While this training will not require a great deal of time, it is one of the most critical on the training calendar.

The third vertical column emphasizes the justification that provides the basis for the differentiation of curriculum. This basis should establish what sorts of differentiation will take place and provides guidance for the changes in curriculum required for gifted programs. While several different lists of principles of differentiation exist, the one most commonly used in Texas schools was developed by the National/ State Leadership Training Institute for the Gifted and the Talented. The list of principles is included in *The Texas State Plan and Guidelines for the Education of the Gifted and Talented* (Appendix F) and on page xi of this issue.

These principles offer a very broad basis for curricular evaluation with regard to differentiation. The restatement of each principle in terms of a question provides a check of whether that principle is present in the curriculum. Familiarity with the principles becomes a nonnegotiable aspect of teacher training. Teachers should be familiar enough with the principles to relate them to appropriate curricular examples.

The combination of the Principles of Differentiation and the scope and sequence, emphasized in column four, become the framework and foundation of all curricula to be developed. All of the instruction that occurs in the classroom should relate to these two documents. The curricular scope and sequence states what should be taught and at what level. Therefore, the scope and sequence establishes a framework for the instructional program.

Depending on the kind of program established and the type of curriculum to be developed, the scope and sequence may be one of two types. The first is a skills-based document that *modifies* the skills in the general school curriculum. This document will generally address a variety of thinking, research, and application skills. In the case of curriculum that *replaces*, or is created in addition to the general curriculum, the scope and sequence document will emphasize both skills and content. In both cases, the document must relate to and support the student goals of the gifted program and should address the specific learning characteristics and needs of the gifted student. The scope and sequence document also establishes another link in the evaluation chain. Through these indicators of instructional direction, instructors and administrators are provided concrete examples of the skills and content that will be evaluated.

The development of a scope and sequence does not need to be a lengthy process. Materials exist in adequate numbers to define a variety of thinking skills, identify their component parts, and suggest when they might be introduced. Requiring teachers to do more than identify the skills to be addressed and receive training on

them requires the use of a commodity a district can ill afford to waste--time. Districts may review existing scope and sequence documents to see if they can be modified to meet local needs. This can save both time and money, enabling district personnel to focus on other program issues. However, it is extremely important that the document is modified to meet local needs so that it truly reflects what is taught and where it is taught in the district.

Some practitioners in the field of gifted education suggest that this approach deprives teachers of "ownership" in the curriculum. The concept of ownership in either the scope and sequence or the curriculum is difficult to attain. Ownership can be defined as a high degree of expertise with the content and skills to be taught. It will occur only after sufficient training, the development of the curriculum, and the field-testing of the curriculum has been accomplished. Curriculum is "owned" only after it is used.

To assure that the curriculum is used, training during this phase is critical. In the past, most teacher preparation programs have not included specific instruction in the selection and use of higher order thinking skills. In order for instructors to effectively provide direction for students, the teachers must be able to use these skills themselves prior to their developing curriculum around the skills. Many of the skills are complex, multilevel processes requiring teachers and students to go far beyond such basic skills as those listed in Bloom's taxonomy. Due to the complexity of the skills, teachers should have a working knowledge of how the skills are used, why they are used, and how to incorporate these skills into content areas. Training will be especially important if the program planners are adapting an existing scope and sequence rather than working with teachers to develop their own personal one. Trained teachers will begin to feel ownership in the curriculum as they become more comfortable with it.

Curriculum that grows out of the scope and sequence is the heart of any instructional program. The program elements that are essential for gifted learners are defined in the scope and sequence, but the actual modification of content, process, and product is defined in the curriculum document represented in the fifth vertical column of Figure 1. It provides the response to the student's perennial question, "Why am I here, in this place, at this time?" The student is in this place to learn a particular body of knowledge that is defined as curriculum. This body of knowledge, these elements, are essential for the student to function successfully in society.

The issue of what specific body of knowledge should be taught and how it is administered to gifted students becomes clouded when it is acknowledged that there is no specific body of content labeled "Gifted Only." It remains for program planners to modify existing curriculum by adding or deleting information and by matching this content to the particular type of program implemented. What the curriculum looks like will be determined in large part by the earlier decision made when developing the scope and sequence--does the program model implemented require curriculum that is *modified* or curriculum that serves as a *replacement* for the general education curriculum?

While there are numerous models that may be used when developing curriculum, the particular model selected is not as critical as the determination that a consistent approach be used throughout the district. However, in keeping with the Principles of Differentiation, certain elements should be present regardless of the type of model selected. As an example, curriculum should be developed around broad based themes. *Themes* are used to provide a unifying concept from which a learning unit is developed. This issue, concept, or problem becomes the central focus for student learning. The theme typically is viewed as a single word descriptor, but may be expressed as a phrase, sentence, or paragraph to describe the learning experience. Themes may be as abstract as Justice or as concrete as Pollution.

Themes are reenforced by *generalizations* that are broad statements of student learning. They may be stated in phrases or sentences and they establish managerial directions for the unit of study by stating clearly what the student will learn in the unit. These, in turn, lead to student objectives that establish, in behavioral terms, exactly what students will do as they interact with the content. The step by step directions for this interaction are described in student/teacher activities.

Perhaps the single most critical phase in the development of curriculum is the field-testing.

Field-testing may be viewed as the actual implementation of the curriculum in a limited access setting. Curricular changes may then be made based on direct feedback from students/teacher experiences rather than developer interaction. Interim field-testing may be accomplished while the curriculum continues to be developed in order to avoid a lengthy time gap between development and implementation.

The final column in the chart stresses the importance of evaluation. Evaluation is seen by many as the final step in the instructional process. In a much larger sense, evaluation is the bridge that carries developers deeper into program development. Many programs rely upon a mixture of student products and subjective evaluation from students, parents, and teachers to address program success. While student products may reflect the actual learning that has taken place, they frequently serve to close the instructional cycle rather than to provide an objective measure of skills attained. Evaluation of student learning must take a more objective turn in order to legitimize instruction in gifted programs and to determine if the student is learning new ways to process data. Based on the findings, curricular improvements are made in the program.

The process that has been described requires a great deal of planning and commitment on the part of district educators. At the same time, it assures that the curriculum developed for the gifted/talented program will both meet the needs of the students and the needs of teachers and administrators involved in its implementation.

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Multidisciplinary Programs at the Elementary Level

Michele J. Riojas
Third Grade Teacher
Judson Independent School District
San Antonio, Texas

A multidisciplinary curriculum is necessary for gifted students because it corresponds to and meets the needs of many characteristics these children display. Gifted students are quite able to "see the big picture," and learn best when they are presented with information on a global scale. Other characteristics that are reenforced by using a multidisciplinary approach include:

- the ability to make relationships between disparate pieces of information;
- the ability to move from concrete facts to abstract concepts; and
- the increased concern for "adult" issues and problems.

Giovanni Gozzer (1982) defines the term "discipline" as:

> A process in which learning finds expression [and] encompasses the division of knowledge into various branches...Disciplinarity appears to be a compartmentalization determined by the need to gain thorough knowledge of...each cognitive area.

Historically, however, educators have tended to separate disciplines into so many subject areas that students have lost a sense of wholeness. Subjects are studied in such isolation that students begin to believe that composition, history, and literature are mutually exclusive topics (Wolfe, 1984). This has resulted in part from the recent intensified focus on the basic skills, which causes many teachers to feel pressed for time to instruct in all areas (Melle & Wilson, 1984). Spaziano and Gibbons (1986) note that "A strict disciplinary approach propagates a narrowness of view that stands in marked contrast to current trends...." This "particle approach" must be corrected by achieving "holism or synergy at all levels" (Wolfe, 1984).

To achieve this holistic effect, teachers must plan to bring relationships among the various disciplines to the students' attention. The approach can be particularly successful in curricula written for gifted elementary students. The following assumptions should underlie any multidisciplinary unit written for gifted elementary students.

1. Gifted students should explore epistemological issues.
2. A model of curriculum and instruction for the gifted should include a dimension that focuses on the development of the thinking processes.
3. A special curriculum for the gifted should reflect a discipline-field and an interdisciplinary orientation.
4. The Interdisciplinary Concept Model should serve as a precursor to independent study.
5. Gifted students can, and in many cases should, be involved in the development of interdisciplinary units (Jacobs & Borland, 1986).

Jacobs and Borland (1986) recommend several steps when developing these units. The first is to select a topic. Hilary Dufner (personal communication, June 1989) recommends selecting broad themes, or topics with "common threads." Examples of a theme include "Patterns," "Conflict," and "Influences." These themes relate to many disciplines and provide the overarching concept for unit study. Step Two involves brainstorming associations. This is an interactive activity between the teacher and the students. In Step Three, guided questions for inquiry are formulated. These questions should be based upon the commonalities noted during the brainstorming that occurred in Step Two. The objective of Step Four is to design and implement activities. By following these steps, and adding culminating activities and evaluation, a teacher can develop a beneficial multidisciplinary unit (J. T. Murphy, personal communication, June 23, 1989).

While there are those who still will argue that the disciplines should remain separate entities, many researchers agree that "significant knowledge is interdisciplinary" (White, 1981).

Significant gains in student achievement will occur when students become aware of the relationships between subjects; consequently, motivation, understanding, problem solving, and thinking processes will increase (Reihs & Ramirez, 1987). By using a multidisciplinary approach, students will better comprehend the significance of an occurrence from one situation to the next, and understand the correlation between seemingly unrelated disciplines. Making mental connections is not only a possible, but a probable, outcome of a multidisciplinary unit (White, 1981).

Effective multidisciplinary instruction is action-centered, blending concepts "from all disciplines to solve realistic problems and challenges" (Melle & Wilson, 1984). It is student-centered (Dufner, 1989), and dependent upon an accepting point of view of the instructor (White, 1981). It prepares students for the future world they will face by "emphasizing inductive reasoning, interpretation, experimentation, risk-taking strategies, patterns and connections..." (Kistler, 1988). Aesthetic awareness, flexibility in thinking, and self-esteem will be developed as students make mental connections and realize their ideas and responses are of great worth (Fortson, 1977).

The research notes a great number of successful multidisciplinary and interdisciplinary curricula. They tend to be used primarily by teachers combining math with science or combining language arts with social studies (Murphy, 1989), but many effective units involving other subjects also exist.

A traditional example that weds social studies and language arts is the Alleman-Brooks and Fitzgerald (1977) unit on Consumerism. Both feel the skills of listening, speaking, reading, and writing can be particularly well developed while learning the skills taught in social studies. They chose "Consumer Education" as the unit's focus because it "is a process through which people of all ages helped to redefine the values they place upon their personal resources and their purchasing power" (Alleman-Brooks & Fitzgerald, 1977). The unit specifically investigates breakfast cereals and advertising, because of the students' interest in the topic.

Parker (1987) outlines an interdisciplinary curriculum for third graders, entitled Explore. The curriculum focuses on teaching students thinking skills and incorporates the disciplines of science and social studies in the following units:

- Common characteristics of living things
- Stages of development
- Similarities in occupations and avocations dealing with living things
- Common adaptations to different natural environments
- Common characteristics of different kinds of communities
- Similarities in occupations and avocations within and for communities

(Parker, 1987).

Research also provides many viable recommendations for both teachers and instructional leaders for implementing a multidisciplinary curriculum. Perhaps the most important factor is the commitment to the development of multidisciplinary units. One key will be the support of the campus principal. Riehs and Ramirez (1987), offer specific suggestions for principals who are interested in developing a multidisciplinary curriculum. The authors stress that principals can bring opportunities for interdisciplinary learning to the attention of the teachers. Additionally, they:

- play a role in individual course scheduling.
- set schoolwide priorities.
- encourage the use of in-service time for developing the interdisciplinary process.
- play a role in course sequencing.
- discourage the adoption of loosely sequenced, one-semester...electives to replace the traditional core curriculum in math and English.

The principal and the teachers who believe in the concept of multidisciplinarity and obtain the support of the faculty will find that the entire campus will benefit immensely. Ralph Ross (1981) notes that:

> Subjects are not wholes torn from the world to be studied in isolation. Nor are they experiences of a special kind with no relation to experiences of other kinds...As one increases the categories one uses in thought, one increases the size of the object of thought.

By applying multidisciplinarity to the classroom, student experiences become more realistic--and more *enjoyable*!

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Too often, disciplinarity and interdisciplinarity are viewed as an either/or proposition (Hayes-Jacobs, 1981). This, in our opinion, is an unfortunate and unnecessary dichotomy. Gifted students need to acquire the unique knowledge, skills, and language of the various disciplines as well as the vantage point and integrating dynamic of the interdisciplinary approach. It is this dual emphasis, along with the conscious focus on epistemological issues, that provides a means for differentiating content in a defensible manner. Just as pioneering artists like Joyce and Picasso could not break the rules until they had fully mastered them, one cannot derive full benefit from interdisciplinary studies until one acquires a solid grounding in the various disciplines that interdisciplinarity attempts to bridge.

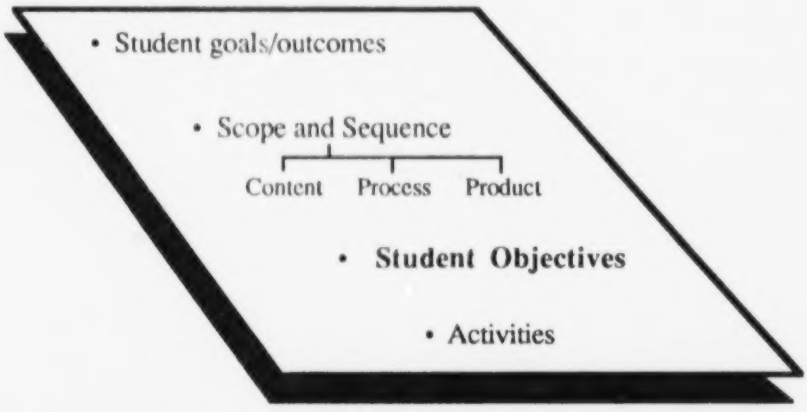
Heidi H. Jacobs &
James H. Borland

Developing Student Objectives That Are Differentiated for Gifted/Talented Students

Judith L. Martin
Education Specialist
Region XX Education Service Center
San Antonio, Texas

In Texas, a State Board of Education rule requires that districts "develop curriculum specifically designed for gifted and talented students that includes student objectives and a kindergarten through 12 scope and sequence" (1991). This article will focus on writing student objectives that are differentiated for gifted and talented students and that comply with the State Board rule.

In a school district's curriculum framework for gifted/talented education, the student objectives are based on the student goals/outcomes and the scope and sequence of the curriculum for the gifted program. The following diagram reflects this relationship:



Student objectives that are differentiated for gifted/talented students contain at least three elements--content, process, and product. The elements serve as the foundation for well-written objectives. The **content** elements should be broad-based, multidisciplinary, and stress generalizations and student interest. The **process** elements stress higher order thinking skills, research skills, affective skills, and an integration of basic skills. The **product** element emphasizes the development of new ideas and new techniques for communicating them (Kaplan, 1979). In the examples of student objectives in this article, these curricular elements are indicated by the notations shown below.

Content ☐

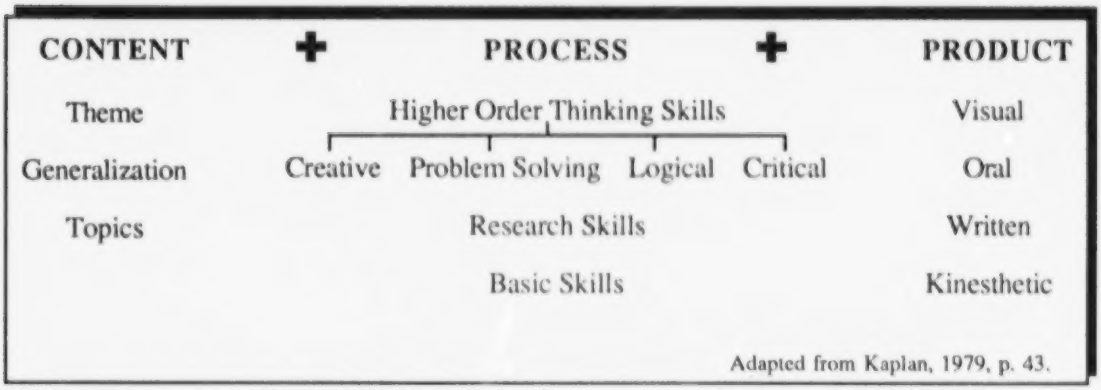
Process _____

Product ••••••••••••••

In their study of ☐frontiers,☐ the gifted/talented students in grade five, will develop a multi-media display that shows ☐the influence of a famous person (past or present) who demonstrated the "pioneer spirit."☐ The students will gather evidence from periodicals, original diaries, and other primary sources.

A closer look at the elements of **content + process + product** yields the breakdown shown in Figure 1:

Figure 1



Student objectives that are differentiated for gifted/talented students contain these elements and delineations and should be drawn from the district's scope and sequence. The major parts and subparts of the following example of a student objective are shown in Figure 2.

Gifted/talented students in Government will establish criteria to judge the significance of natural or person-made power to change beliefs, life-style, and communication. Students will gather data by using a retrieval system, identify main ideas in fiction and nonfiction references, and develop a graphic representation to illustrate their findings.

(Adapted from Kaplan, 1986, p. 182.)

Figure 2

STUDENT OBJECTIVE DELINEATION

PROCESS +	CONTENT +	CONTENT +	PROCESS +	PRODUCT
Critical Thinking Skill ↓ Establish criteria to judge	Theme ↓ Power Generalization ↓ Power can be natural or person-made	Topic ↓ Significance of power to change beliefs, life-style and communication	Research Skill ↓ Use of retrieval system Basic Skill ↓ Identify main idea	Visual Product ↓ Graphic representation

Another example using a similar formula follows:

Gifted/talented students in grade five will compare and contrast the feudal system with present day social systems to demonstrate that all cultures create economic systems. Students will use books, periodicals, and videodiscs to collect information and share their findings in a chart.

A fourth aspect that can be added to student objectives relates to **affective** skills. This element includes the skills of self-understanding and evaluating outcomes. In the following examples, the affective element is designated by the dotted line:

In their study of cultures, the gifted/talented students in World History will investigate uses, abuses, preservation, and interdependence of natural resources around the world. After participating in a round table discussion to share their findings, the students will evaluate the dynamics of the group and consider ways in which the process could have been improved.

(Adapted from *The Texas State Plan and Guidelines for the Education of the Gifted/Talented,* 1990, p. 50.)

In their study that change requires adaptation, fourth grade gifted/talented students will brainstorm solutions for saving a particular flora or fauna on endangered lists. After establising critieria for judging the solutions, they will select the best one and offer suggestions for implementation to submit to an environmental group or government agency for consideration.

In summary, writing student objectives that are differentiated for gifted/talented students is based on the following steps:

1. Select a broad-based organizing element (theme, issue, problem).
2. Determine the range of content or knowledge to be learned and correlate it with generalizations.
3. Choose an array of processes or skills to be developed (higher order thinking skills, research skills, affective skills).
4. List a variety of possible products or outcomes.
5. Develop learning experiences and activities that are based on student interests and needs.

(Adapted from the work of Sandra Kaplan.)

The culmination of these five steps is shown in the examples listed below:

Gifted/talented students in grade two will demonstrate an understanding of how change can be positive or negative by showing in a poster or visual display how animals have or have not adapted to changes in their environment. (Adapted from *The Texas State Plan and Guidelines for the Education of the Gifted/Talented*, 1990, p. 49.)

In their study of adaptation, sixth grade gifted/talented students in Language Arts, will analyze the effects of natural disasters on characters in at least two novels, on people or animals in real life today, and on a culture of the past to prove that such catastrophes can have positive consequences. Students will use newspapers, interviews, and other appropriate sources and share their findings in a play or TV newscast.

In their study of conflict, gifted/talented students in Biology will formally debate the influence of scientific discoveries on medical practices and ethics after interviewing a professional in the field and gathering data from current journals. The students will summarize their position in a paper and judge their own and peer's debate performance on an evaluation form.

Gifted/talented students in Earth Science will investigate the concept of a tenth planet through an analysis of current research in scientific journals and share their findings in an oral presentation that will be judged by previously set criteria. (Adapted from *The Texas State Plan and Guidelines for the Education of the Gifted/Talented*, 1990, p. 49.)

Student objectives provide the scaffolding for the activities teachers facilitate with gifted/talented students. The objectives are driven by the generalizations and serve as the main focus of instruction for these students. Clearly and concisely written objectives that are defensibly differentiated strengthen the curriculum and outcomes for these students.

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An Interdisciplinary Unit on Environmental Studies

This unit incorporates many of the ideas explained in the articles in this issue of *Update in Gifted Education*. The unit focuses on the theme of "Structures," and includes student objectives that lead to understanding of generalizations related to that theme. It is interdisciplinary in nature, and sample essential elements from science, language arts, mathematics, social studies, marketing education, and economics have been included to indicate how they are incorporated in the unit.

"Environmental Studies" was originally developed by Tom Weldon (Highland Park Independent School District) and B.K. Dean (Region XVIII Education Service Center) for students at the 1987 and 1988 Texas Governor's School. It was adapted for use in Texas public schools by Betty Strickland (Region VII Education Service Center).

Environmental Studies

Subject/Course:	Environmental Science
Theme:	Structures
Generalization:	The influence of one structure on another is not always immediately apparent.
Course Generalization:	Environmental balance is affected by the relationships of natural and person-made structures.
Root Discipline:	Science

Thinking Skill(s)	Research Skill(s)	Student Product(s)
Application Analysis Synthesis Evaluation Fluency	Formulate hypothesis, select procedure, gather and organize data, test hypothesis, formulate/ verify/communicate conclusion	Game, written hypothesis Comparative charts Terrarium Class wall chart Self-selected product Daily log

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Essential Elements

SS 75.68(k)(2)(C)(G)	Sci 75.64(m)(2)(B),(10)(A) (m)(9)(A),(9)(B) (m)(3)(B),(6),(7)(A),(8) (3)(A)	Math 75.63(i)(4)(A) (n)(6)(C) (f)(4)(C)

Objective 1:

In their study of structures, the students will prove or disprove environmental balance is affected by the relationships of living and nonliving structures. Using multiple and varied resources on ecological principles and theories, students will share their findings in a self-selected product.

Essential Elements:	Activities:
SS 75.68(k)(2)(C)	1. Brainstorm components of the environment necessary to support life.
Sci 75.64(m)(2B)(10A)(B)	2. Review appropriate literature to gain basic understanding of vocabulary and environmental concepts, principles, and theories concerning ecosystems.
	3. In order to determine "pitfalls" in trying to create the delicate balances needed to sustain a closed system terrarium, complete the following:
Math 75.63(i)(4)(A) Math 75.63(n)(6)(C) Sci 75.64(m)(9)	a. Develop a game to predict resulting effects on individual components of the environment when the factors are varied and play in groups. (If computers are available for student use, students may wish to adapt an appropriate program which utilizes variable factors or develop a game of their own. If computers are not available, students may wish to adapt commercial games or develop a game of their own.)
Math 75.63(f)(4)(C) Math 75.63(i)(4)(A) Sci 75.64(m)(9)(A)(B) SS 75.68(k)(2)(G)	b. Prepare comparative charts to show mathematical ratios of living/nonliving components necessary to maintain life in a closed system of a specified size and defend the ratios in class discussion.
Sci 75.64(m)(2),(A)(B),(3)(B),(6),(7)(A),(8),(9)(A),(9)(B)	4. Create a closed system terrarium in which the organisms remain healthy for at least four weeks and record results daily in a log (can use 2-liter soft drink container).
Sci 75.64(m)(3)(a) SS 75.68(k)(3)(A)	5. Distinguish relevant parallel relationships in environmentally-balanced closed systems, regardless of size, by comparing those of the terrarium to those of planet Earth. Communicate and defend these parallels in a self-selected format.
Sci 75.64(m)(3)(A)	6. As a class, categorize the parallels drawn, along with the supportive evidence, and create a wall chart for class reference to share findings on the generalization that "environmental balance is affected by the relationships of natural and person-made structures."

Materials/Resources:

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Witte Museum - San Antonio Brackenridge Park.

Evaluation:

Student/teacher appraisal of products using student/teacher criteria generated at beginning of activities.

Subject/Course:	Environmental Science
Theme:	Structures
Generalization:	The influence of one structure on another is not always immediately apparent.
Course Generalization:	Environmental balance is affected by the relationships of natural and person-made structures.
Root Discipline:	Science

Thinking Skill(s)	Research Skill(s)	Student Product(s)
Application	Data gathering	Written reports
Analysis (compare/contrast)	Data organization	Panels
Synthesis	Interviewing	Debates
Evaluation		Bibliography
Originality		Transparencies
Forecasting		Charts
Predicting		Webs (mind maps)
		Self-selected product
		Class journal

Essential Elements

SS 75.68(k)(1)(B)	Eco 75.69(2)	Sci 75.64(m)(10)
(k)(2)(C)(D)(E)		(3)
(F)(G)	SS 75.68(j)(3)(A)	(6)
(k)(3)(A)(C)		(7)

Eng 75.61(a)(b)(c)(d)4
Journalism 75.61(aa)(4)(F)

Eng 75.61(a)(4)(N)

Objective 2:

Students will compare/contrast from past and present the management, economic, and social relationships in governing structures that deal with environmental issues. Use multiple and varied primary and secondary resources to gather data to create an organizational chart to communicate predicted future relationships in relevant governmental structures.

Essential Elements:	Activities:
Eng 75.61(a)(4)(N)	1. Generate a comprehensive annotated bibliography related to past and present environmental issues.
	2. Use the information in the bibliographic sources to construct a grid (transparency and/or chart) relating components of the environment to the time periods (beginning with 1800) when they came to public attention (ex: issues of land, water, air, noise, visual pollution). Discuss in class.
	3. Develop an annotated time line to trace the changes in the organizational scheme of government agencies that handle environmental issues at national, state, and local levels, beginning with 1800.
SS 75.68(k)(1)(B) (k)(3)(C)	4. Use the data concerning relationships of environmental problems with specific time periods and governmental agencies involved with those issues to construct a transparency overlay and/or comparative chart distinguishing the significant attitudinal changes that have occurred and discuss.
Sci 75.64(m)(10) SS 75.68(k)(2)(C)(D)(E)	5. Analyze, in groups, a chosen environmental issue through several decades and share with the class. Use the following (or alternate) steps:
Eng 75.61(a)(b)(c)(d)(4)	a. Read books, magazine articles, editorials, etc. representing various aspects of the selected environmental issues to gather sufficient background information to create a web (mind map) of the topic.
Eco 75.69(2) SS 75.68(j)(3)(A)	b. Utilize the mind map to generate appropriate questions on the selected issue that will distinguish accommodations made in governmental structures handling environmental issues to reflect the following:
SS 75.68(k)(3)(A)	1) management factors (who determines who does what; how much control do they have; how effectively can they enforce the control, etc.)
	2) social factors (protests, demonstrations, public opinion, media coverage)
	3) economic factors (lobbyists, special interest groups, etc.).
Eng (Jour) 75.61(aa)(4)(F)	c. Conduct interviews of persons who are/were directly involved with the selected environmental issue using the prepared questions (can be a telephone interview or interview letter).
SS 75.68(k)(3)(A)	d. Determine and outline the relevant aspects of a precedent-setting court case that exemplifies the complexities of the environmental issue.
	e. Distinguish relevant/irrelevant data relating to the issue using group-developed criteria.
SS 75.68(k)(2)(D)(E)	f. Prepare a presentation of relevant information concerning the issue and present through group-selected format to classmates.
SS 75.68(k)(2)(C)	6. Determine links among the issues presented by all groups and record the positive and/or negative aspects of those connections. Create a wall-size web (mind map) to communicate the interconnectedness of all environmental issues and governing structures that deal with them.
Sci 75.64(m)(6)	7. Gather data from the web and any other sources to debate in teams, from the perspectives of environmental associations such as Greenpeace or Sierra Club and a representative of energy related or logging industries, the following issues:

SS 75.68(k)(2)(C)(D)(E)(F)(G)
Sci 75.64(m)(6)(7)

a. Relevant data that forecast future environmental concerns.
b. Predicted changes that may occur in the relationships of governmental structures that deal with environmental concerns.
c. Future "necessities" involved in balancing the safety of the environment with the growing human population.

8. If appropriate, encourage students to submit their ideas to an environmental agency.

Materials/Resources:

Chiras, Daniel D. *Environmental Science: A Framework for Decision Making*, Addison-Wesley Publishing Company, 1989.
Carey, Helen H. & Judith E. Greenberg. *How to Use Primary Sources*. Franklin Watts, 1983, New York.
Christianson, Betsy Pogue. *Interview Research: Make an Appointment With Success*. D.O.K. Publishers, Inc., 1983, Buffalo, NY 14214.

Evaluation:

Student/teacher evaluation of products using student/teacher criteria generated at beginning of activities.

Subject/Course:	Environmental Science
Theme:	Structures
Generalization:	The influence of one structure on another is not always immediately apparent.
Course Generalization:	Environmental balance is affected by the relationships of natural and person-made structures.
Root Discipline:	Science

Thinking Skill(s)	Research Skill(s)	Student Product(s)
Application Analysis Synthesis Evaluation Fluency	Collecting and organizing data Formulating/verifying/ communicating conclusions	Matrix Prepared questions Field notebook Written proposals Architectural rendering Environmental Impact Statement (EIS) Flowchart Time line

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Essential Elements

SS 75.68(k)(1)(B) (k)(2)(A-G) (k)(3)(A)(C) (k)(4)(D)	Eng 75.61(a)(b)(c)(d)(1) 75.61(a)(b)(c)(d)(2) 75.61(c)(4)(H) Eng (Jour) 75.61(aa)(4)(F)	Sci 75.64(m)(1)(A) (1)(B) (2) (5) (6) (8) (9) (10)

Objective 3:

In their study of structures, students will create plans for building a hypothetical city that take into account the environmental balance affected by the relationship of natural and person-made structures. After collecting and organizing information from data bases and other sources, students will share their plans with the local Sierra Club or Save the Earth Club.

Essential Elements:	Activities:
SS 75.68(k)(2)(C)	1. Brainstorm and discuss factors involved in developing a new city.
SS 75.68(k)(3)(A)	2. Use information collected to create a grid/matrix for comparing the impact of economic, social, and legislative elements on various environmental factors. Discuss how these interacting factors are likely to help shape the future (see materials: example of cross impact matrix in Futures Unlimited).
Sci 75.64(m)(10) Eng (Jour) 75.61(aa)(4)(F) SS 75.68(k)(1)(B)	3. Prepare appropriate interview questions concerning the development of a city for a panel of experts and pose them to the appropriate professionals. Summarize major points in class discussion.
Sci 75.64(m)(1)(a)(b)(5)	4. Gather and record observable data in a field notebook concerning soil conditions, water, meteorology, biological members (excluding humans), and topography at the teacher-selected site as identified on field lab task cards which will be compared to other student data for validation.
Sci 75.64(m)(10) SS 75.68(k)(3)(A)	5. Review, as a class, the National Environmental Policy Act (NEPA) of 1969. Obtain actual guidelines for preparing an Environmental Impact Statement (EIS), a federal requirement resulting from NEPA and discuss its use as a planning tool.
Eng 75.61(a)(b)(c)(d)(1)	6. Divide into city planning groups and formulate written proposals for developing the site. State how the following were identified and considered in arriving at the proposals:
Sci 75.64(m)(2)	a. Human, physical, and aesthetic needs.
SS 75.68(k)(2)(A-G) SS 75.68(k)(3)(C)	b. Fauna and flora needs. c. Principles and theories regarding land and natural resource uses.
	d. Local/state/ and/or national guidelines.
Sci 75.64(m)(2)(6)(9) SS 75.68(k)(2)(A-G) Eng 75.61(a-d)(2)	7. Prepare, as a group, an EIS for the project proposal as completely as possible, including the following: a. What the project is. b. Why it is needed. c. Short-term/long-term environmental impact of the project. d. Ways to minimize the impact. e. Alternatives to the project.
	8. Prepare architectural renderings of proposals for site (or a model, relief map, etc.).
	9. Prepare a flowchart to sequence the information for presentation to appropriate state agencies.
	10. Set up a suggested time line stating persons involved, responsibilities, dates for initiating each step, and dates of completion for project.
Eng 75.61(a-d)(2) Eng 75.61(c)(4)(H)	11. Present visual and written materials concerning proposals for hypothetical city development on selected site by groups during class time (can be shared with invited guests; is not competitive; is to show common/different factors in all proposals).
SS 75.68(k)(2)(C) SS 75.68(k)(4)(D)	12. Discuss in class the proposals of all groups and the results found in comparing variations within the methods used to deal with the environmental factors satisfactorily.

Materials/Resources:

Chiras, Daniel D. *Environmental Studies: A Framework for Decision Making*, Addison-Wesley Publishing Company, Menlo Park, CA 94025. 1984.

Fitch, Robert M. and Svengalis, Cordell M., *Futures Unlimited: Teaching About Worlds to Come*, National Council for the Social Studies, Bulletin 59, 1979, 2030 M Street, N.W., Washington, D.C. 20036.

Council on Environmental Quality Reprint 40 CFR Parts 1500-1508 (as of July 1, 1986), "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act."

Evaluation:

Student/teacher evaluation of products using student/teacher criteria generated at beginning of activities.

Subject/Course:	Environmental Science
Theme:	Structures
Generalization:	The influence of one structure on another is not always immediately apparent.
Course Generalization:	Environmental balance is affected by the relationships of natural and person-made structures.
Root Discipline:	Science

Thinking Skill(s)	Research Skill(s)	Student Product(s)
Application	Collecting and organizing data	Informal poll
Analysis	Surveying	Survey instrument
Synthesis		Media campaign
Fluency		Flowchart
Flexibility		Time line
Originality		Environmental issue solution
Elaboration		Oral presentations
Judging with criteria		

Essential Elements

Sci 75.64(m)(10)	SS 75.68(k)(2)(B)(C)(D)(E)	Mkt. & DE 75.86(d)2-7
	SS 75.68(k)(3)(C)(E)	
Eng 75.61(a)(b)(c)(d)(2)	SS 75.68(k)(4)(A-F)	
75.61(u)(3)(A-D)	SS 75.68(j)(3)	
75.61(u)(5)(A-F)		

Objective 4:

After selecting an environmental issue of local concern, students will use multiple and varied data gathering processes and creative problem solving to offer solutions and implementation strategies to show environmental balance can be maintained with person-made structures.

Essential Elements:	Activities:
Sci 75.64(m)(10) SS 75.68(k)(2)(D)(E)	1. Divide into groups and determine general and/or specific environmental problem areas within the local community by conducting an informal poll.
SS 75.68(k)(4)(F)	2. Utilize the expertise of a professional researcher in determining the techniques for conducting a legitimate survey and in preparing a valid survey instrument based on the results of the informal poll.
Sci 75.64(m)(10) SS 75.68(k)(3)(C)	3. Conduct the survey. Tabulate and rank order the results of the survey to determine a local environmental issue on which to focus as a class.
Sci 75.64(m)(10) SS 75.68(k)(2)(B)	4. Use a creative problem solving method to address and develop a "best" proposed solution for a selected environmental issue.
Mkt. & DE 75.86(d)(2-7) SS 75.68(j)(3) SS 75.68(k)(3)(E)	5. Invite advertising/public relations specialists to guide students in determining an appropriate positive media campaign for an "action plan" to implement the proposed solution with community support.
SS 75.68(k)(2)(C)	6. Decide on a plan and prepare necessary flowchart and time line; follow through.
Eng 75.61(a-d)(2)	7. Send a copy of the students' proposed solution of the selected environmental issue to appropriate city/state and/or national representatives of governing structures.
Eng 75.61(u)(3)(A-D) Eng 75.61(u)(5)(A-F) Eng 75.61(a-d)(2)	8. Present the proposed solution to as many civic clubs, PTAs, etc., as possible to gain community awareness and support.
Eng 75.61(a-d)(2) Eng 75.61(u)(5)(A-F)	9. Get on the agenda for a city council meeting and make a presentation.
SS 75.68(k)(4)(A-F)	10. Assess results to provide the basis for future improvements.

Materials/Resources:

Burges, Bill. *Facts & Figures: A Layman's Guide to Conducting Surveys.* Institute for Responsive Education, 1976. 704 Commonwealth Ave., Boston, MA 02215.

Juntune, Joyce. *Science Inquiry with REACH.* 1977. 120 Creative Corner, 4175 Lovell Rd., Box 18, Circle Pines, MN 55014.

Moller, Ruth B. & Sidney J. Parnes & Angelo M. Biondi. *Guide to Creative Action.* Charles Scribner's Sons, New York, 1977.

Roets, Lois Schelle. *Survey and Public Opinion Research.* Leadership Publishers, 407 West Cherry St., P. O. Box 51, New Sharton, IA 50207.

Evaluation:

Student/teacher evaluation of products using student/teacher criteria generated at the beginning of activities.

Courses Reflected by Essential Elements Listed Throughout the Unit

SCI 75.64(m)	Environmental Science
SS 75.68(j)	Sociology
SS 75.68(k)	Advanced Social Science Problems
MATH 75.63(f)	Algebra II
MATH 75.63(i)	Elementary Analysis
MATH 75.63(n)	Computer Mathematics II
ECON 75.69	Economics, with Emphasis on the Free Enterprise System and its Benefits
ENG 75.61(a-d)	English I, II, III, IV
ENG 75.61(aa)	Journalism
ENG 75.61(u)	Introduction to Speech Communication
MKT. & DE 75.86(C)	Advertising and Display Services

Curriculum Development: Questions and Answers

Evelyn Hiatt, Director of Programs I
Jeanette Covington, Education Specialist II
Division of Gifted/Talented Education
Texas Education Agency

How is the development of curriculum for gifted students different from curriculum that is developed for any other student?

Basically, it's not. Curriculum is developed to meet the needs of the learners. That means that it is necessary to assess the competencies and needs of the students and base the curriculum on the determined strengths and weaknesses. Gifted learners have certain characteristics that have implications for the type of learning experiences they receive in school. As an example, gifted students generally can move quickly from concrete facts to abstract concepts. Therefore, less time can be spent on acquiring basic content information and more time can be spent on analyzing, synthesizing, and evaluating data. The chart below, which contains characteristics listed by Clark (1988, p. 127) in *Growing Up Gifted,* offers further examples of how learner characteristics influence the kind of curriculum that is developed for gifted students. Notice that many of the curricular implications relate to time and treatment issues rather than content issues.

Most of the characteristics relating to gifted learners includes words such as "unusual" or "early ability." That's because the characteristics are present in all children and all children need exposure to the kind of curriculum that is developed for gifted students. However, with gifted students, the level of intensity and the timing of the experience is what differentiates the curricular experience.

Figure 1

Characteristic	Curricular Implications
Self directed learner	Opportunities to develop assignments and products independently or in small groups
Unusual intensity, persistent goal directed behavior	Flexible time allotments for development of studies; Early emphasis on research and study skills
Unusual sensitivity to the needs and feelings of others	Objectives that focus on the development of a value system that can be translated into social action
Early ability to delay closure	Need for open-ended assignments that enable student to draw hypotheses that require testing

So while I'm technically doing the same thing with the curriculum for the gifted program that I do for the general program, I still have to differentiate. What exactly is differentiated curriculum?

The concept of differentiated curriculum refers to the need to modify or alter the curriculum in order to make it responsive to the characteristics that differ learners from each other. In her works, Dr. Sandra Kaplan stresses that, in order to adequately differentiate the curriculum for the gifted, there are four major factors to consider:

- the general developmental nature of the learner,
- the specific characteristics that define the learner as gifted,
- the essential elements or basic curricular expectations for all learners, and
- the nature of the differentiated curricular expectations.

The chart on page xi, which is included in *The Texas State Plan and Guidelines for the Education of the Gifted/Talented* as Appendix F, reflects the principles that define a qualitatively differentiated curriculum.

These principles focus on the various curricular elements that differentiate the curriculum for the gifted. These include differentiating the:

- *content* or subject matter the learner will comprehend.
- *process skills* or competencies the learner will master.
- *product* or communication forms the learner will create or develop.
- *affective* needs or attitudes, values, and appreciations the learner will experience or develop.

These elements are important at every age and grade level, but are selectively emphasized and particularized to meet the needs of the specific population for whom the curriculum will be designed and implemented. In other words, the focus given to these elements at the time and place in the student's development ultimately determines the appropriateness of the differentiation for the learner. As an example, in the middle school grades, program planners might place more emphasis on affective elements of the curriculum than they would at the elementary level. Advanced content might be the focus at the later secondary grades, while research and study skills are stressed in the elementary grades. However, in the scope and sequence and student objectives, it should be clear that all four of the curricular elements will be addressed during the kindergarten through grade twelve continuum.

At times there are students in my class who are not identified as gifted but who express interest in the differentiated curriculum on which the gifted students are working. Must students be identified to participate?

There are two issues to consider in addressing this question. First, students absolutely do not have to be identified gifted to participate. Anytime a student is capable of participating in an activity he/she should be encouraged to do so. It is important to recognize that when the curriculum is appropriately modified for gifted students, it serves as a form of assessment for program placement. When a teacher notices that a student not identified for the program seems to be both interested and able to participate in program activities, it is a sign that the student should be considered for program placement.

Secondly, if there are large numbers of students not identified for the program who express interest and are able to participate, it may be that the curriculum needs to be evaluated. Perhaps it is not modified to the extent that it needs to be and/or that the regular curriculum should be strengthened. Some districts have found that as they progress in learning how to differentiate curriculum appropriately, the level of that differentiation also becomes more rigorous and sophisticated.

State Board rules require that my district have a curricular scope and sequence and student objectives for the gifted pro-

gram. What exactly is a scope and sequence and do I need to have it and the student objectives in separate curriculum guides?

The scope of a curriculum refers to what is going to be covered, while the sequence refers to the order in which the content, process, product, and affective continuum will be taught in kindergarten through grade 12. Depending on the services provided gifted learners, districts may or may not be developing separate guides.

Some districts have very extensive services that include separate classes from the primary grades through secondary school for gifted students. In these cases, separate curriculum guides may be developed. If the gifted program focuses on specific subject matter, the curricular information relating to the program may be an addendum to the curriculum guide on that subject or it may appear as an additional column within the regular curriculum guide. What is important is that all teachers who are responsible for the program for gifted students are aware of what the student objectives and scope and sequence are.

Before developing the scope and sequence and student objectives for the program, however, districts are encouraged to review the curriculum that is used in the general school program. It is critical to remember that the program for gifted students is built upon the curriculum in the regular classroom. The stronger this foundation is, the sounder the program for gifted students will be.

Does Texas have any essential elements for the gifted?

The essential elements that are included in Chapter 75 form the basis of instruction for all students, including the gifted. Because programs for gifted youth are developed in relation to local needs and curriculum, no specific essential elements for the gifted have been developed.

When developing my curriculum, should I emphasize enrichment or acceleration?

First, let's define the terms. Acceleration moves students vertically through the curriculum at a quicker pace. Examples of pure acceleration are early entrance into kindergarten or first grade, credit by examination, or entry into algebra in the eighth grade. Enrichment provides experiences that replace, supplement, or extend learning that is offered in the general curriculum. Examples of enrichment include seminar programs, independent study programs, and flexible scheduling (Kaplan, 1974, p.46).

In most cases, curriculum for gifted students is a combination of enrichment and acceleration. There are times and disciplines when one approach takes precedence over the other. As an example, students who are gifted in mathematics may be accelerated through the curriculum, taking algebra at an earlier grade or compacting two years of mathematics instruction into one year. While there are times when acceleration is appropriate, it should be remembered that it alone can not be considered appropriate modification of the curriculum for gifted learners. As an example, one teacher who teaches both an honors calculus class and a calculus class for gifted students believes that, not only are her gifted students younger, but they are able to move from theoretical concepts to practical applications of the material they are learning.

There's a lot of talk about thematic curriculum. What exactly does this mean and how would I go about developing such a curriculum?

A thematic curriculum is one that centers on a broad-based theme. Examples include curricula related to "Power" or "Change" or "Influences." While a thematic curriculum is appropriate for all students, it is critical for gifted students because it literally is limitless in its possibilities. A thematic curriculum can be endlessly expanded to include all disciplines. In this issue of *Update*, every article stresses that, in order to provide a handle on a thematic

curriculum, generalizations that relate to it should be developed.

Generalizations are statements that are true both over time and regardless of discipline. Learning experiences or objectives are developed that will enable the student to understand the theme and concepts implied in the generalization. As an example, if the theme of "Influences" was selected, the following generalizations could be the focus of learning experiences or objectives.

- Influences can be positive or negative.
- There are many factors that influence people, places, and things.
- Influences can form a chain reaction.
- An influence can be both a cause and effect.

There are several benefits from using a thematic approach when developing a districtwide differentiated curriculum for gifted students.

- It reflects the characteristics of the gifted. Because many gifted children have the ability to recognize relationships and to draw conclusions from these relationships, a curriculum that is based on themes is very appropriate for them. It assists them in drawing conclusions and transferring knowledge gained in one area to another. While this type of curriculum is particularly meaningful for the gifted, it enhances learning opportunities for all students for the same reasons indicated previously.

- It assists in the implementation of an interdisciplinary curriculum. The generalizations that are presented will be relevant to all disciplines and, therefore, the teacher can refer to examples across the disciplines. When emphasizing that "influences can be positive and negative," the kindergarten teacher might discuss how students' speaking manners influence others [Language Arts EE--75.22 (a)(2)(A)(iii)]. Students chart the influence taste has on whether or not they like certain foods [Science EE--75.25 (a)(1)(A)]. The class can hypothesize the negative influences of poor hygiene [Health EE--75.26 (a)(1)(A)]. This approach assists students in recognizing relationships between subject matter content and among disciplines. School districts that use a thematic approach either change the theme each year or at each grade level so that students work with many different themes during their school career. Over time, students not only grasp the relationships among disciplines and the relationships between topics within disciplines, but also the relationship among themes.

- A thematic curriculum relates individual facts to a "big" idea or generalization. It is a more economical way for students to gather and store information. Rather than referencing facts to a discipline, facts are referenced by themes to various disciplines. The student learns that all things are connected. For example, in the study of the theme of Origins, the student learns that books begin with words, plants begin as seeds, mammals begin as embryos, and proofs begin as hypotheses. If the student can grasp the idea of connectiveness, the teacher does not have to reteach facts separately in each discipline.

- A thematic approach does not change *what* is taught, it changes *when* and *how* it is taught. Teachers often are concerned that they will omit part of the basic or core curriculum if they formulate lessons by theme rather than by subject. The first grade teacher will still cover positive traits of self and others [Social Studies EE 75.29 (b)(1)(A)], awareness and sensitivity to natural and person-made environments [Fine Arts EE--75.28 (b)(1)(A)], and the effects of using alcohol, tobacco, and other drugs [Health EE--75.26 (b)(1)(D)] while discussing the generalization, "Personal actions influence what other people think of me." While the content is taught, the teacher can be working on critical thinking skills such as hypothesizing, comparing and contrasting, and making judgments. Research skills can be employed to assist students in gathering data to defend their opinions relative to the content. Products such as charts, time lines, and audio tapes will supplement instruction and offer new ways for young students to show what they have learned. Teachers who have mastered the ability to teach by themes note the changes in their own teaching style and in the learner outcomes of all students. Educators who feel the need to emphasize basic content and skills as the prerequisite to more advanced study can still teach thematically because this approach integrates the teaching of *both* the basics and the advanced content and skills that are important for students to master.

My curriculum has to reflect a kindergarten through grade 12 scope and sequence, but isn't the thematic approach too difficult for young children?

Think of the questions that young children ask. They frequently seem to be random and unrelated to each other, but often there is a connection that parents and teachers discover only after some questioning of their own. The thematic approach reinforces the connecting of concepts. The young gifted child is able to assimilate many bits of information and discover relationships among them. By providing a curriculum that helps them to understand that certain themes tie information together, educators are assisting these students to make new connections with greater ease. Consequently, they learn more and faster.

References

Clark, Barbara. (1988). *Growing Up Gifted, third edition*. Columbus, Ohio: Merrill Publishing Company.

Kaplan, Sandra. (1974). *Providing Programs for the Gifted and Talented: A Handbook*. Ventura, CA: Ventura County Superintendent of Schools.

UPCOMING CONFERENCES

Texas Association for the Gifted and Talented
14th Annual Conference

November 20-23, 1991
Dallas/Fort Worth Hyatt & Twin Towers

Texas Education Agency
Division of Gifted/Talented Education
Programs for Gifted/Talented Students

February 16-18, 1992
Hyatt Regency Austin

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, U.S. Department of Education.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.

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